Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

**Enhanced shear separation for chiral magnetic colloidal aggregates**[1] CARLOS MENDOZA, Materials Research Institute, UNAM, CARLOS MARQUES, FABRICE THALMANN, Institute Charles Sadron — We study the designing principles of the simplest colloidal propeller, an architecture built from four identical spheres that can couple translation with rotation to produce controlled drift motion. By considering superparamagnetic beads, we show that the simultaneous action of a magnetic field and a shear flow leads to the migration of the cluster in the vorticity direction. We investigate the dependence of the migration velocity on the geometrical parameters of the cluster, and find that significant cluster separation can be achieved under the typical operation conditions of microfluidic devices. Reference: C.I. Mendoza, C.M. Marques, and F. Thalmann, "Enhanced shear separation for chiral magnetic colloidal aggregates" arXiv:1011.1488

[1]Partial financial support: Chemistry Department of the Centre National de la Recherche Scientifique and DGAPA-PAPIIT Grant No. IN-115010.

Carlos Mendoza
Materials Research Institute, UNAM

Date submitted: 30 Nov 2010 Electronic form version 1.4